
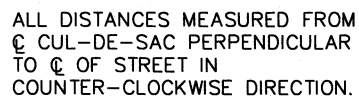


LEGEND

① 1" LETTER HEIGHT	④ 1/4" LETTER HEIGHT
② 1/2" LETTER HEIGHT	⑤ MIN. 1/8" LETTER HEIGHT
③ 3/8" LETTER HEIGHT	

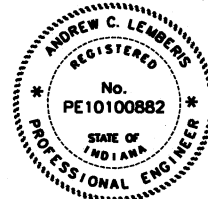
1. THIS COVER SHEET SHALL BE USED ON ALL PLAN SETS.
2. ALL LETTERS & NUMBERS SHALL BE MECHANICAL, UPPER CASE.
3. INDEX NUMBERS & LETTERS SHALL BE A MIN. OF 1/8" LETTER HEIGHT.

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY EFFECTIVE DATE: APRIL 2007				CITY OF MISHAWAKA, INDIANA	
ITEM	REVISION	APPROVED DATE		ENGINEERING STANDARDS	
				COVER SHEET	SHT. NO. I-1



1. DOWNSTREAM MANHOLE NUMBER
2. LOCATION OF TAP FROM DOWNSTREAM MANHOLE
3. LENGTH OF LATERAL FROM MAIN TO STUB
4. DEPTH OF LATERAL AT END

PREPARED BY: **DLZ INDIANA, LLC**



APZ 4/24/07

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY
EFFECTIVE DATE: APRIL 2007



CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

SEWER TAP AS-BUILT DETAIL

SHT. NO.

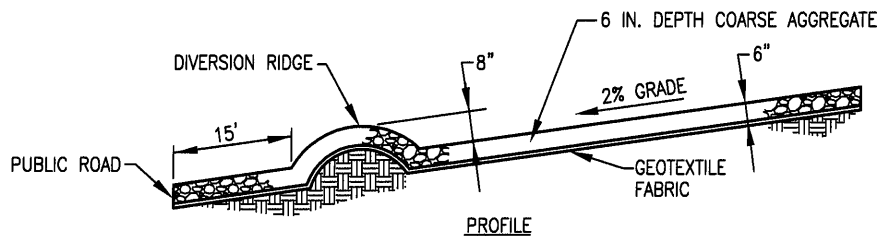
1-2

REQUIREMENTS:
(EXHIBIT 3.01-B)

MATERIAL: 2-3 IN. DIA. WASHED STONE (INDOT CA NO. 2) OVER A STABLE FOUNDATION.
THICKNESS: 6 IN. MINIMUM.
WIDTH: SEE MINIMUMS ON PLAN BELOW OR FULL WIDTH OF ENTRANCE/EXIT ROADWAY, WHICHEVER IS GREATER.
LENGTH: 50 FT. MINIMUM FOR SMALL SITES (LESS THAN 2 ACRES); 150 FT. MINIMUM FOR LARGE SITES (2 ACRES AND LARGER). THE LENGTH CAN BE SHORTER FOR SMALL SITES SUCH AS FOR AN INDIVIDUAL HOME, BUT SHALL BE OF SUFFICIENT LENGTH TO PREVENT TRACKING.
WASHING FACILITY (OPTIONAL): LEVEL AREA WITH 3 IN. WASHED STONE MINIMUM OR A COMMERCIAL RACK, AND WASTE WATER DIVERTED TO A SEDIMENT TRAP OR BASIN.
GEOTEXTILE FABRIC UNDERLINER: REQUIRED TO PROVIDE GREATER BEARING STRENGTH.

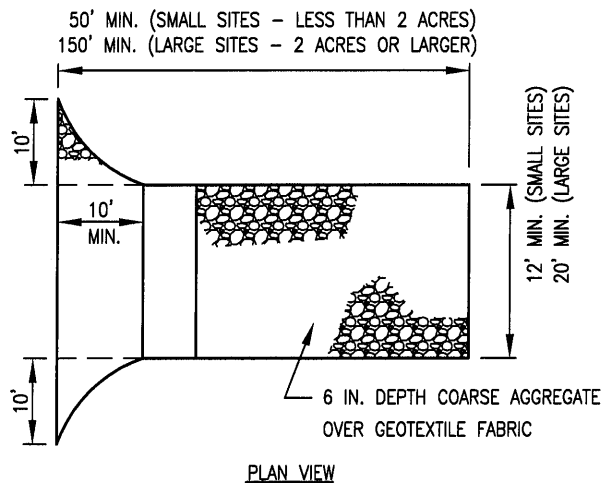
INSTALLATION:
(EXHIBIT 3.01-C)

1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES IN PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA, AND GRADE AND CROWN FOR POSITIVE DRAINAGE.
3. IF SLOPE TOWARDS THE ROAD EXCEEDS 2%, CONSTRUCT AN 8 IN.-HIGH DIVERSION RIDGE WITH 3:1 SIDE SLOPES ACROSS THE FOUNDATION AREA ABOUT 15 FT. FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE ROAD (SEE PROFILE).
4. INSTALL CULVERT PIPE UNDER THE PAD IF NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.
5. PLACE STONE TO DIMENSIONS AND GRADE SHOWN IN THE EROSION/SEDIMENT CONTROL PLAN, LEAVING THE SURFACE SMOOTH AND SLOPED FOR DRAINAGE.
6. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.



MAINTENANCE

- * INSPECT ENTRANCE PAD, SEDIMENT DISPOSAL AREA, AND ALL OTHER EROSION CONTROL MEASURES WEEKLY AND AFTER STORM EVENTS OR HEAVY USE. REQUIRED REPAIRS SHOULD BE COMPLETED IMMEDIATELY.
- * RESHAPE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
- * TOPDRESS WITH CLEAN STONE AS NEEDED.
- * IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED IF THE WATER IS CONVEYED INTO A SEDIMENT TRAP OR BASIN.
- * REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY.



PREPARED BY: DLZ INDIANA, LLC



Brian M. Smith
6-1-12

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CITY OF MISHAWAKA, INDIANA

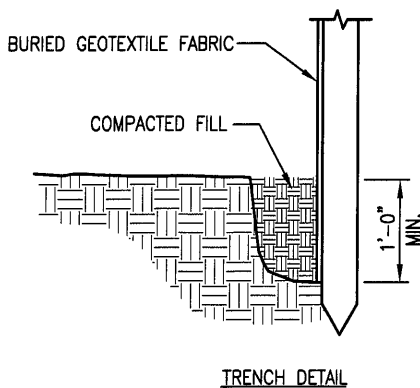
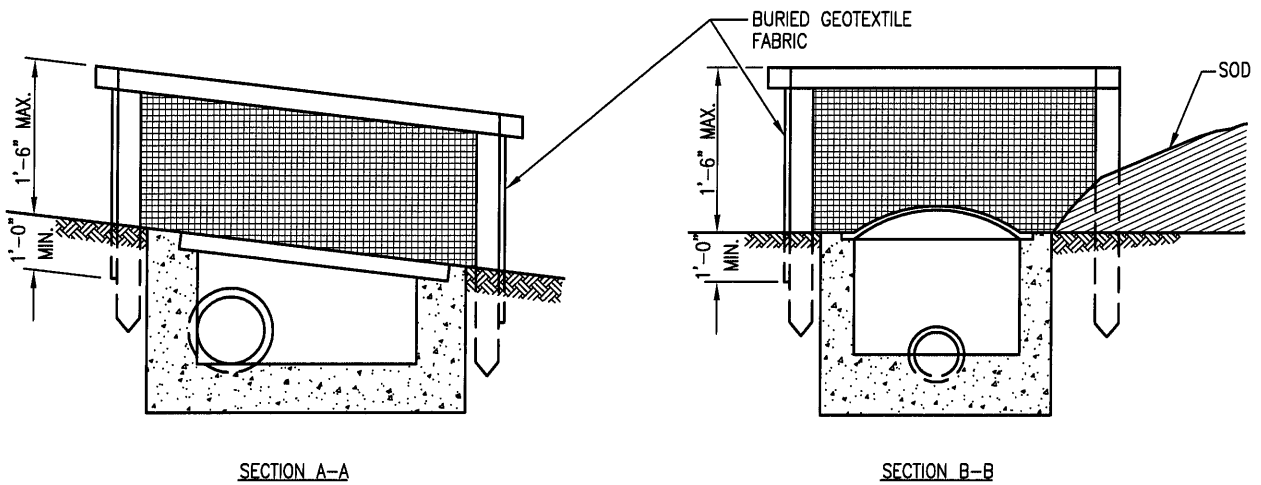
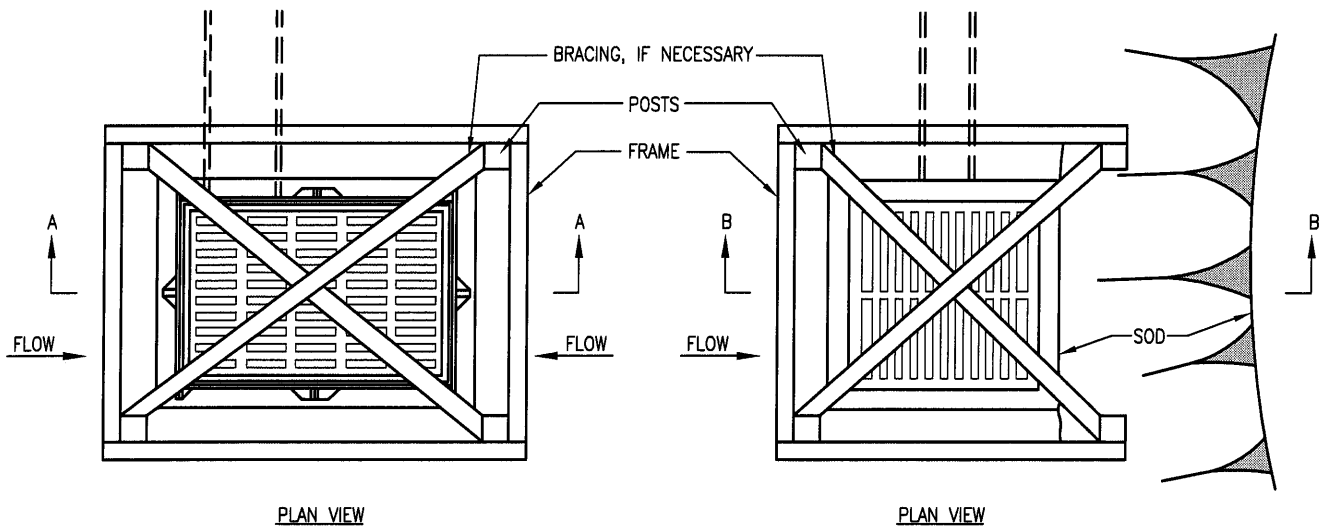
ENGINEERING STANDARDS

TEMPORARY GRAVEL
CONST. ENTRANCE

SHT. NO.

1-3

ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012



INSTALLATION:

1. DIG TRENCH AROUND PERIMETER OF INLET. DRIVE POSTS INTO SOIL AND STRETCH GEOTEXTILE FABRIC TIGHTLY BETWEEN EACH POST. PLACE BOTTOM 12" OF GEOTEXTILE FABRIC INTO TRENCH. BACKFILL WITH SOIL MATERIAL AND COMPACT. BRACE AS NECESSARY.
2. THE FRAME SHALL BE WRAPPED WITH ONE CONTINUOUS PIECE GEOTEXTILE FABRIC AND A 2' OVERLAP SHALL BE PROVIDED.

MAINTENANCE:

1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN DAYS. IF FENCE FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANYWAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.
2. REMOVE DEPOSITED SEDIMENT TO PROVIDE STORAGE FOR NEXT STORM EVENT. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE THE GEOTEXTILE BOX AND SEDIMENT DEPOSITS, GRADE AREA TO THE ELEVATION OF STORM DRAIN INLET TOP AND STABILIZE IMMEDIATELY.

FOR USE IN LANDSCAPE
AREAS ONLY

PREPARED BY: DLZ INDIANA, LLC



B.M.S.
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

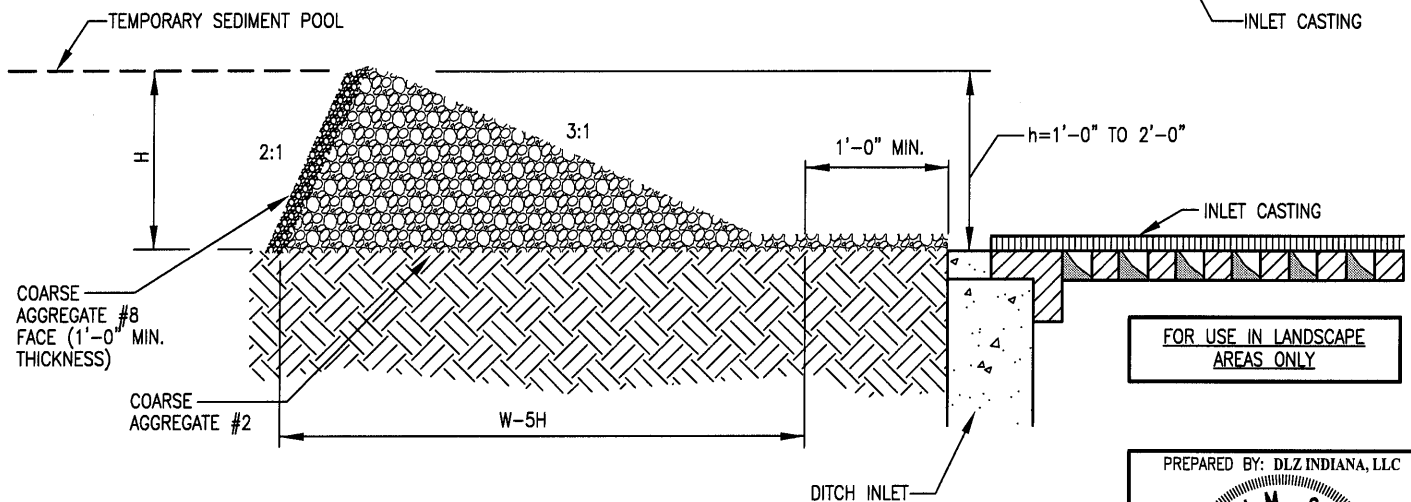
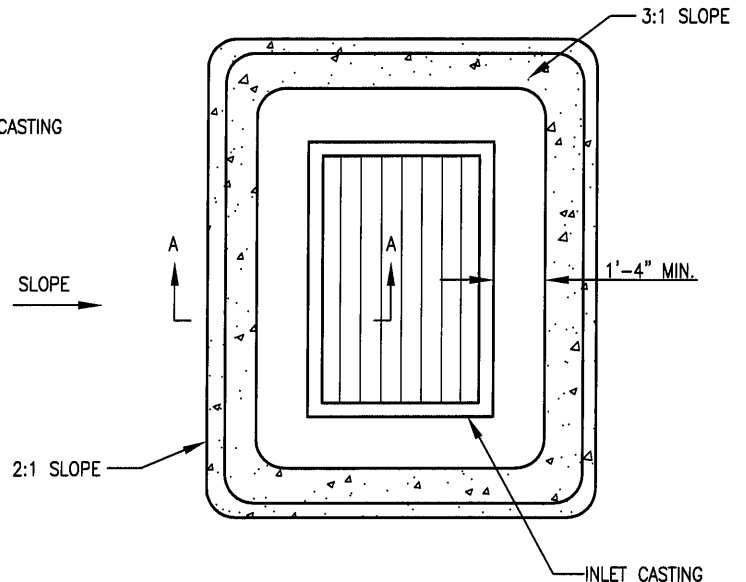
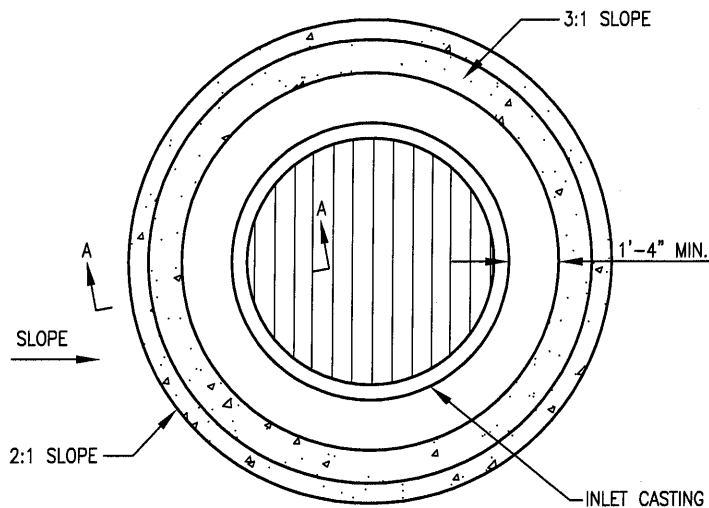
INLET PROTECTION
GEOTEXTILE BOX

SHT. NO.

1-4

ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012





SECTION A-A

NOTES:

1. H=12" - 24" ABOVE TOP OF INLET
2. WEIGHT OF COARSE AGGREGATE #2, TONS:
 $(6.28/27) (0.67^2 + 2.5H) (1 + 3H + 1/2 \text{ INLET WIDTH}) (0.6)$
3. WEIGHT OF COARSE AGGREGATE #5, TONS:
 $(6.28/27) (H) (1 + 4H + 1/2 \text{ INLET WIDTH}) (0.6)$

MAINTENANCE:

1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN DAYS.
2. MAKE NEEDED REPAIRS IMMEDIATELY.
3. REMOVE DEPOSITED SEDIMENT AND REPLACE AGGREGATE AS NEEDED TO MAINTAIN INTENDED FILTER FUNCTION.
4. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE AND PROPERLY DISPOSE OF GRAVEL RING AND SEDIMENT DEPOSITS, GRADE AREA TO THE ELEVATION OF STORM DRAIN INLET TOP AND RESTABILIZE.

PREPARED BY: DLZ INDIANA, LLC



B. M. Smith
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

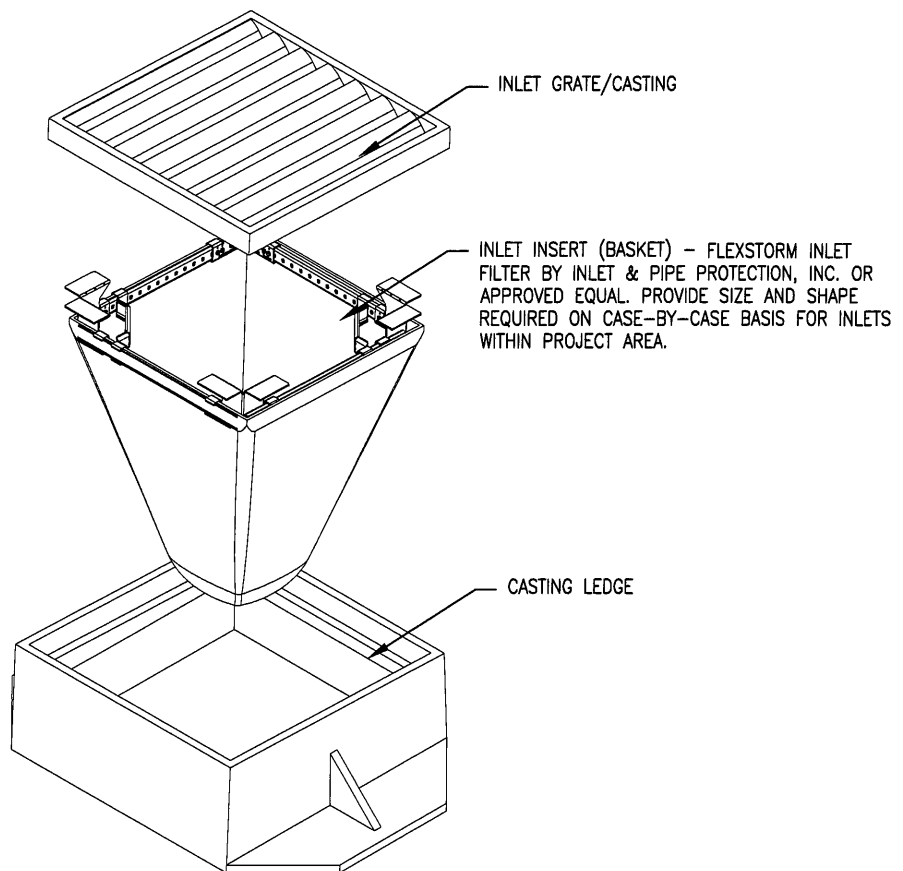
INLET PROTECTION
GRAVEL RING

SHT. NO.

1-5



ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012



INSTALLATION INSTRUCTIONS:

1. INSTALL PER MANUFACTURER RECOMMENDATIONS.
2. REMOVE THE GRATE FROM THE CASTING OR CONCRETE DRAINAGE STRUCTURE.
3. CLEAN THE LEDGE OF THE CASTING FRAME OR DRAINAGE STRUCTURE TO ENSURE IT IS FREE OF STONE AND DIRT.
4. DROP INLET INSERT (BASKET) THROUGH THE CLEAR OPENING AND BE SURE THE SUSPENSION HANGERS REST FIRMLY ON THE INSIDE LEDGE OF THE CASTING.
5. REPLACE THE GRATE AND CONFIRM IT IS ELEVATED NO MORE THAN THICKNESS OF INSERT HANGERS.

MAINTENANCE GUIDELINES:

1. CONSTRUCTION SITE INSPECTION SHOULD OCCUR AT LEAST WEEKLY AND FOLLOWING EACH ½" OR MORE RAIN EVENT.
2. EMPTY THE SEDIMENT BAG IF MORE THAN HALF FILLED WITH SEDIMENT AND DEBRIS.
3. REMOVE THE GRATE, ENGAGE THE LIFTING BARS OR HANDLES AND LIFT FROM THE DRAINAGE STRUCTURE.
4. DISPOSE OF THE SEDIMENT OR DEBRIS IN ACCORDANCE WITH EPA GUIDELINES.
5. REMOVE ANY CAKED ON SILT FROM THE SEDIMENT BAG AND REVERSE FLUSH THE BAG WITH MEDIUM SPRAY FOR OPTIMAL FILTRATION.
6. REPLACE THE BAG IF TORN OR PUNCTURED TO ½" DIAMETER OR GREATER ON THE LOWER HALF OF THE BAG.
7. WHEN THE CONTRIBUTING DRAINAGE AREA WITHIN 50' UPSTREAM OF THE INLET HAS BEEN STABILIZED, REMOVE INSERT (BASKET) AND PROPERLY DISPOSE OF SEDIMENT DEPOSITS.

INSERTS/BASKETS ARE THE ONLY APPROVED METHOD OF PAVEMENT INLET PROTECTION. OTHER MEASURES TO BE USED ONLY WITH PRIOR APPROVAL OF CITY ENGINEER.

PREPARED BY: DLZ INDIANA, LLC



Brian M. Smith
6-1-12

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CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

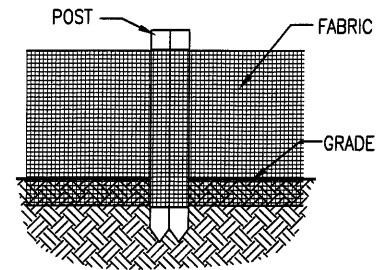
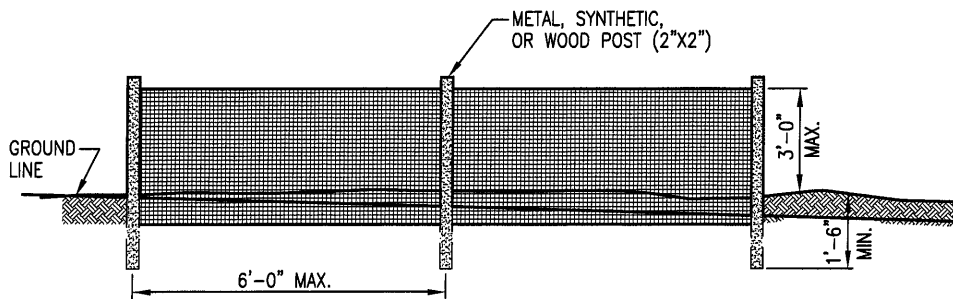
INLET PROTECTION
INSERT (BASKET)

SHT. NO.

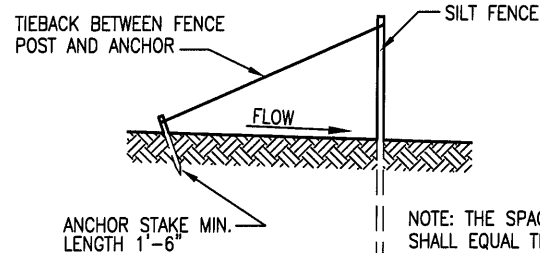
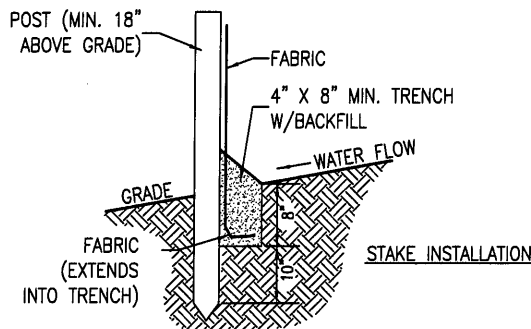
1-6

ITEM	REVISION	APPROVED DATE
	ADOPTED: NEW (REPLACED PREVIOUS DETAIL)	JUNE 2012



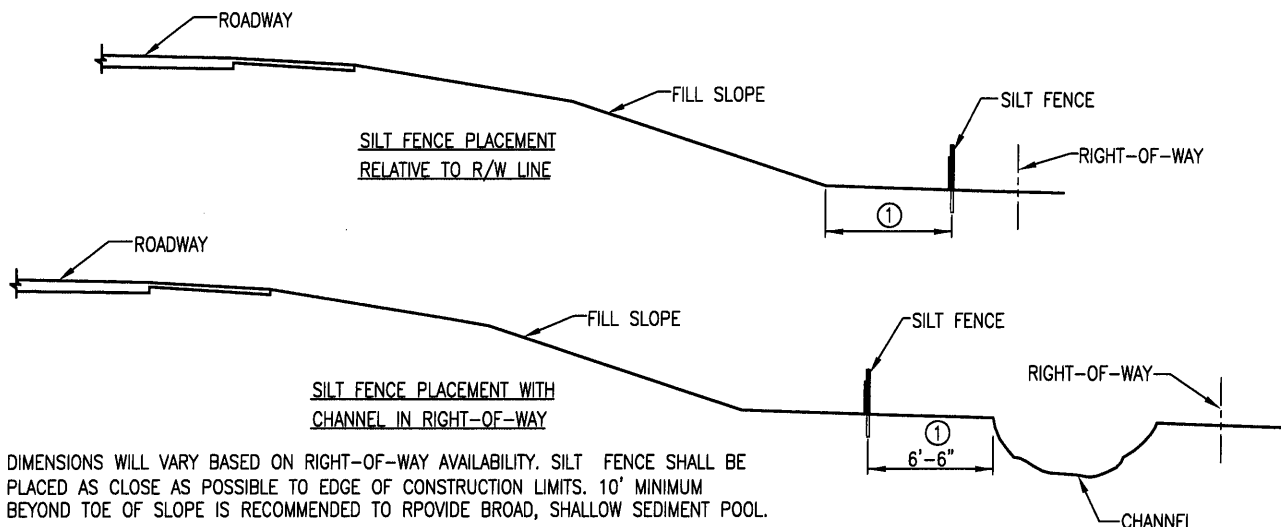


JOINING FENCES



TIEBACK DETAIL

NOTE: THE SPACING OF THE TIEBACKS SHALL EQUAL THE SPACING OF THE POSTS. ADDITIONAL POST DEPTH OR TIEBACKS MAY BE REQUIRED IN UNSTABLE SOILS.



① DIMENSIONS WILL VARY BASED ON RIGHT-OF-WAY AVAILABILITY. SILT FENCE SHALL BE PLACED AS CLOSE AS POSSIBLE TO EDGE OF CONSTRUCTION LIMITS. 10' MINIMUM BEYOND TOE OF SLOPE IS RECOMMENDED TO PROVIDE BROAD, SHALLOW SEDIMENT POOL.

INSTALLATION NOTES:

1. INSTALL FENCING PARALLEL TO SLOPE CONTOUR BY DIGGING A MINIMUM 8" DEEP X 4" WIDTH TRENCH ALONG PROPOSED FENCE LINE. POUND POSTS IN TRENCH 6"- 8" OR UNTIL SECURE. BE SURE TO STRETCH FABRIC TAUT WHEN POUNDING POSTS. FABRIC TO BE PLACED ON UP SLOPE SIDE OF POSTS. DRAPE LOOSE END OF GEOTEXTILE FABRIC INTO TRENCH. BACKFILL AND COMPACT SOIL ON BOTH SIDES.
2. JOIN FENCES BY PLACING THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS AT LEAST 180° IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. DRIVE BOTH POSTS ABOUT 10" INTO THE GROUND AND BURY FLAP.
3. TURN ENDS OF FENCE UP SLOPE SUCH THAT POINT OF CONTACT BETWEEN GROUND AND BOTTOM OF FENCE END TERMINATES AT HIGHER ELEVATION THAN TOP OF FENCE AT LOWEST POINT.

MAINTENANCE NOTES:

1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN DAYS. IF FENCE FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANYWAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.
2. REMOVE DEPOSITED SEDIMENT WHEN IT IS CAUSING THE FILTER FABRIC TO BULGE OR WHEN IT REACHES ONE-HALF THE HEIGHT OF THE FENCE AT IT'S LOWEST POINT. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE THE FENCE AND SEDIMENT DEPOSITS, GRADE THE SITE TO BLEND WITH THE SURROUNDING AREA AND STABILIZE.

PREPARED BY: DLZ INDIANA, LLC



B. M. Smith
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS



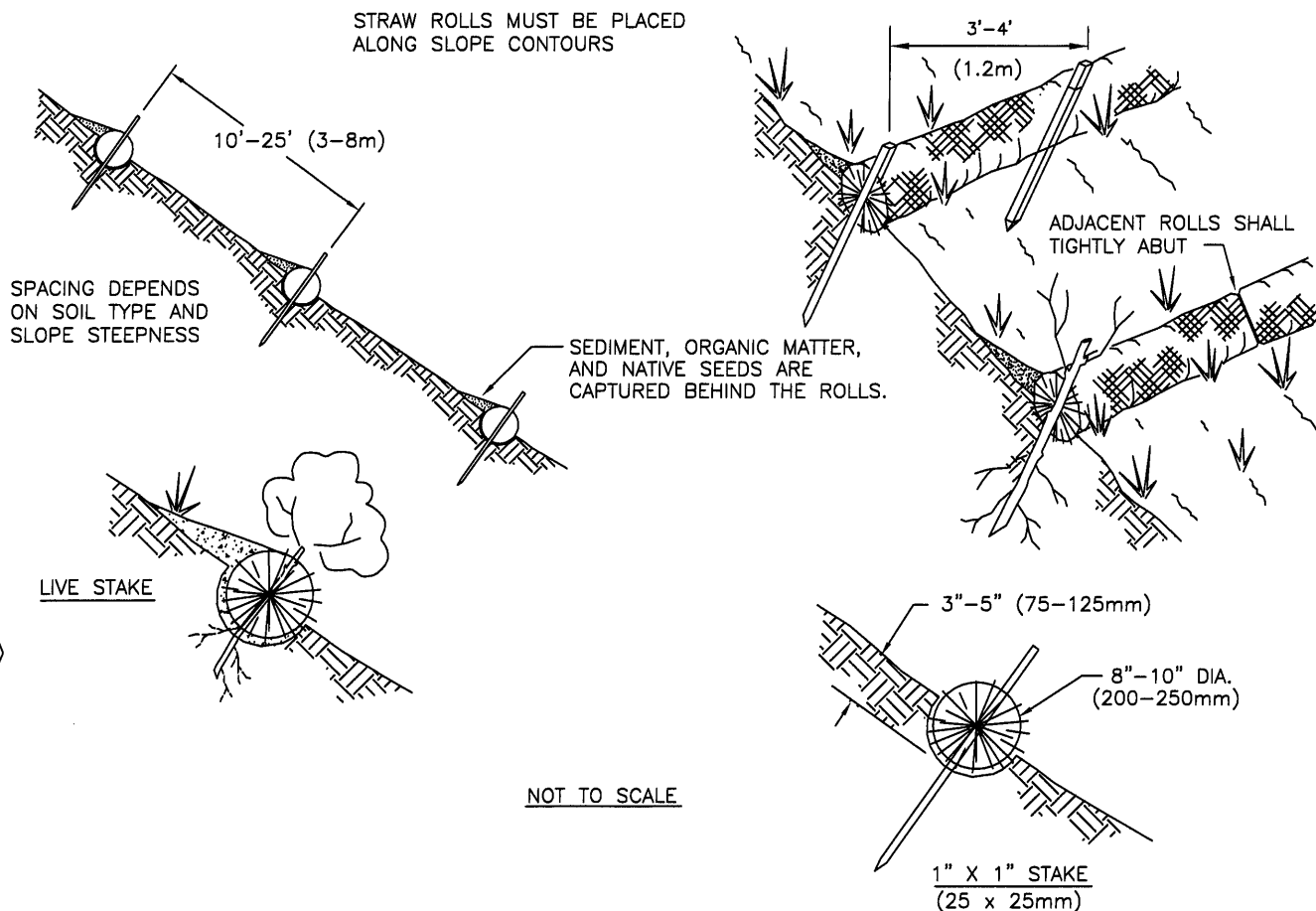
TEMPORARY SILT FENCE

SHT. NO.

1-7

ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012

1996 JOHN McCULLAH
(C)



DESCRIPTION:

STRAW WATTLES ARE ALSO KNOWN AS STRAW WORMS, BIO-LOGS, STRAW NOODLES, OR STRAW TUBES. THEY ARE A SEDIMENT VELOCITY CONTROL DEVICE MADE OF TUBES OF STRAW, RICE, OR COCONUT HUSK ENCASED IN AN ULTRAVIOLET DEGRADABLE PLASTIC NETTING OR 100% BURLAP MATERIAL.

WATTLES MAY BE SUITABLE ALONG THE TOE, TOP, FACE, AND AT GRADE BREAKS OF EXPOSED ERODIBLE SLOPES TO SHORTEN SLOPE LENGTH AND SPREAD RUNOFF AS SHEET FLOW; AT THE END OF A DOWNWARD SLOPE WHERE IT TRANSITIONS TO A STEEPER SLOPE; ALONG SIDEWALKS AND CURBS TO PREVENT SEDIMENT FROM WASHING INTO GUTTERS; AROUND STORM DRAINS AND DROP INLETS; DOWN-SLOPE OF EXPOSED SOIL AREAS; AROUND TEMPORARY MATERIAL SPOIL AND STOCKPILES, SUCH AS TOPSOIL AND FOR STREAM BANK PROTECTION.

MATERIALS:

WATTLES CAN BE FROM STRAW, RICE STRAW, COCONUT HUSKS OR OTHER APPROVED MATERIAL. THE NETTING CONSISTS OF BIODEGRADABLE BURLAP, OR HIGH DENSITY POLYETHYLENE AND ETHYL VINYL ACETATE CONTAINING ULTRAVIOLET INHIBITORS. STRAW SHOULD BE CERTIFIED WEED FREE FORAGE, BY A MANUFACTURER WHOSE PRINCIPLE BUSINESS IS WATTLE MANUFACTURING. COIR (COCONUT FIBER) CAN BE IN BRISTLE AND MATTRESS FORM AND SHOULD BE OBTAINED FROM FRESHWATER CURED COCONUT HUSK.

INSTALLATION:

- LAYOUT A CONTOUR LINE ON THE SLOPE.
- DIG A SHALLOW DEPRESSION (ABOUT 3 TO 5 INCHES DEEP), REMOVE ALL DEBRIS, AND LAY THE WATTLE INTO IT.
- SECURE WATTLE WITH WOODEN STAKES.
- TERMINATING ENDS SHOULD BE TURNED UPHILL (MIN 6") TO PREVENT RUNOFF FROM FLOWING AROUND THE ENDS.
- SEAT THE WATTLE WITH FOOT TAMPED BACKFILL ON THE UPSTREAM SIDE SUCH THAT WATER WILL NOT RUN UNDER IT.

RECOMMENDED WATTLE SPACING BY SLOPE:

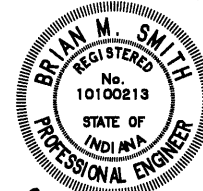
SLOPE	9" DIA	12" DIA
LESS THAN 4:1	20 FT	40 FT
2:1 TO 4:1	15 FT	30 FT
2:1 OR GREATER	10 FT	20 FT

MAINTENANCE:

SEDIMENT SHOULD BE REMOVED ON A ROUTINE BASIS WHEN THE LEVEL OF THE SEDIMENT REACHES ONE HALF THE HEIGHT OF THE EXPOSED WATTLE. DAMAGED AREAS SHOULD BE REPAIRED IMMEDIATELY UNTIL VEGETATION IS ESTABLISHED AND GROWING THROUGH THE MATERIAL.

NOTE: WATTLES MAY BE
USED IN LIEU OF SILT
FENCE IF DESIRED.

PREPARED BY: DLZ INDIANA, LLC



BMS
6-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

CONTOUR STRAW OR
COCONUT WATTLE

SHT. NO.

1-8



ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012

EXAMPLE EROSION CONTROL PLAN

(MODERATE LAND DISTURBING ACTIVITY - 2,000 SF TO 1 ACRE)

INLET PROTECTION
SEE DETAIL 1-6.
MAINTAIN BY REGULAR
CLEANING TO AVOID
CLOGGING AND STREET
FLOODING.

SCALE: 1"=50'

SILT FENCE / COCONUT WATTLE
INSTALL PARALLEL TO CONTOUR OF LAND, EXTEND
ENDS UPSLOPE ENOUGH TO ALLOW WATER TO POND
BEHIND FENCE, AND EMBED PER MISHAWAKA DETAIL
1-7. (PERIMETER PROTECTION)

CONSTRUCTED CONCRETE WASHOUT
DISPOSE OF CONCRETE WASH WATER IN A
WASHOUT CONSTRUCTED PER THE INDIANA
STORM WATER QUALITY MANUAL, AWAY FROM
SURFACE WATERS WHERE SOIL CAN ACT AS A
FILTER OR EVAPORATE THE WATER IN THE EVENT
OF LEAKAGE. DISPOSE OF REMAINING CEMENT
PER LOCAL AND STATE CODES. BE AWARE THAT
THIS WATER CAN KILL VEGETATION.

(PS) PROVIDE TOPSOIL AND
MULCHED SEEDING OR SOD
AT THE COMPLETION OF
CONSTRUCTION

TEMPORARY DIVERSION
DIVERT TO SEDIMENT TRAP
OR STABLE OUTLET
(PERIMETER PROTECTION)

VEGETATIVE FILTER STRIP
20' MIN WIDTH, DO NOT MOW
SHORTER THAN 4 INCHES
(PERIMETER PROTECTION)

DROP INLET PROTECTION
PER DETAILS 1-4, 1-5,
OR 1-6.

DRAINAGE SWALE
STABILIZE IMMEDIATELY AFTER
INSTALLATION WITH SOD OR
OTHER EROSION CONTROL
MEASURE.

LEGEND

- PROPERTY LINE
- - - LIMITS OF GRADING
- - - EXISTING CONTOUR
- - - EXISTING DRAINAGE
- - - PROPOSED DRAINAGE
- → → TEMPORARY DIVERSION
- ♦ — SILT FENCE/STRAW WATTLES
(PER DETAILS 1-7 AND 1-8)
- — TREE PRESERVATION
- ▨ GRAVEL CONSTRUCTION
ENTRANCE (PER DETAIL 1-3)
- ▨ SOIL STOCKPILE
- ▨ VEGETATIVE FILTER STRIP
- (PS) VEGETATION SPECIFICATION

PROPERTY INFORMATION

OWNER: PROPERTY OWNER
ADDRESS
PHONE NUMBER

CONTRACTOR: CONTRACTOR NAME
ADDRESS
PHONE NUMBER

PROJECT INFORMATION

ADDRESS:
SITE SIZE (ACRES):
TAX LOT NO.:
SECTION:
TOWNSHIP:
SITE RUNOFF DRAINS TO:

CONSTRUCTION SEQUENCE FOR EROSION CONTROL (SEE 1-11)

1. EVALUATE THE SITE.
2. INSTALL PERIMETER EROSION & SEDIMENT CONTROLS.
ANTICIPATED START OF EXCAVATION DATE: _____
3. PREPARE THE SITE FOR CONSTRUCTION.
4. BUILD STRUCTURE(S) & INSTALL UTILITIES.
**CONSTRUCTION COMPLETE
(SOIL NOT STABILIZED)** DATE: _____
5. MAINTAIN CONTROL PRACTICES.
6. REVEGETATE SITE.
7. REMOVE REMAINING TEMPORARY CONTROL MEASURES & STABILIZE.
**ANTICIPATED COMPLETION
(GROUND COVER ESTABLISHED)** DATE: _____

PREPARED BY: DLZ INDIANA, LLC



Brian M. Smith
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA



ENGINEERING STANDARDS

EROSION CONTROL-
MODERATE LAND DISTURBING

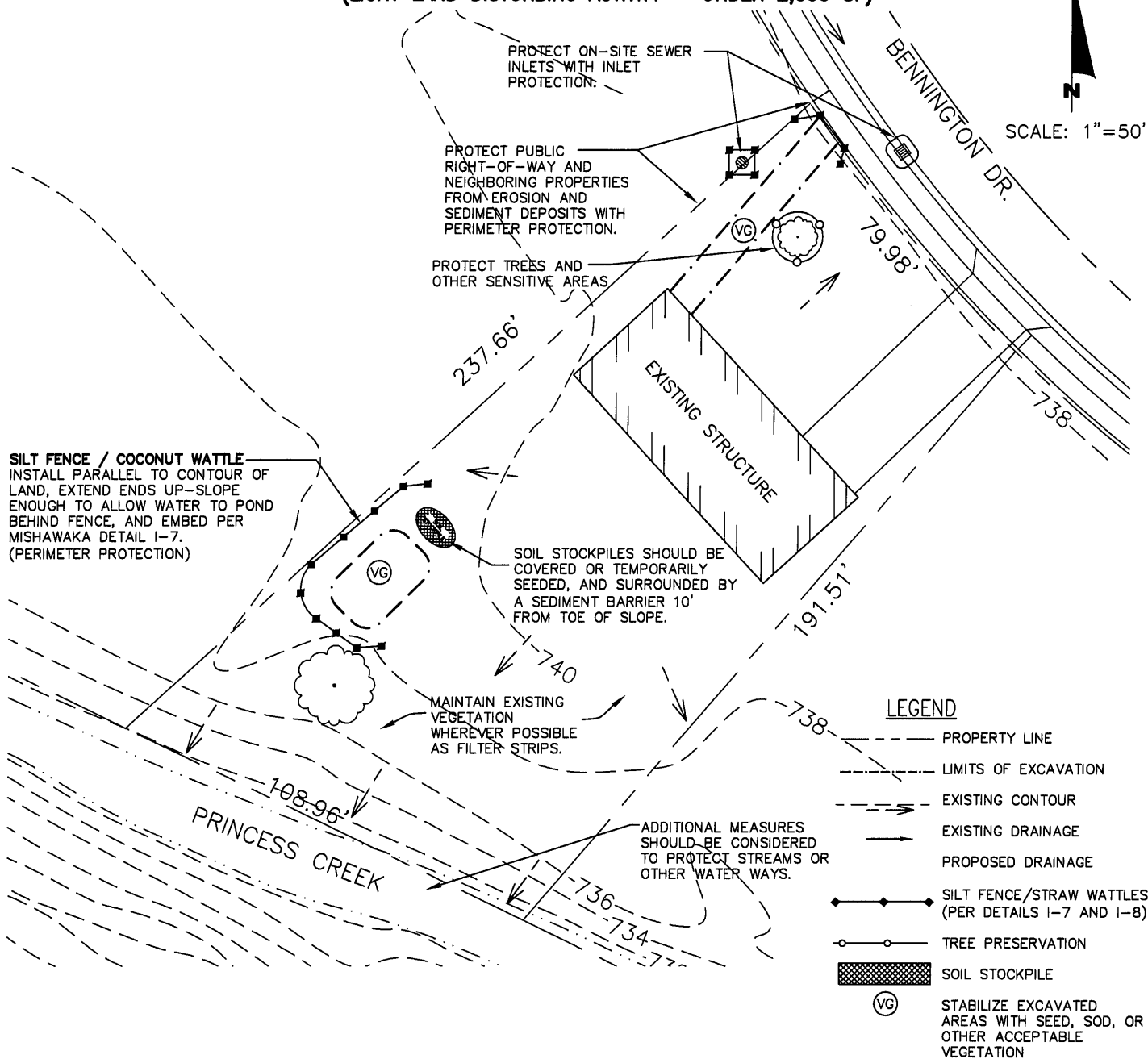
SHT. NO.

1-9

ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012

EXAMPLE EROSION CONTROL REQUIREMENTS

(LIGHT LAND DISTURBING ACTIVITY - UNDER 2,000 SF)



PROPERTY INFORMATION

OWNER: PROPERTY OWNER
ADDRESS
PHONE NUMBER

CONTRACTOR: CONTRACTOR NAME
ADDRESS
PHONE NUMBER

PROJECT INFORMATION

ADDRESS:
SITE SIZE (ACRES);
TAX LOT NO.:
SECTION:
TOWNSHIP:
SITE RUNOFF DRAINS TO:

CONSTRUCTION SEQUENCE FOR EROSION CONTROL

(SEE I-11)

- EVALUATE THE SITE.
- INSTALL PERIMETER EROSION & SEDIMENT CONTROLS.
ANTICIPATED START OF EXCAVATION DATE: _____
- PREPARE THE SITE FOR CONSTRUCTION.
- BUILD STRUCTURE(S) & INSTALL UTILITIES.
CONSTRUCTION COMPLETE (SOIL NOT STABILIZED) DATE: _____
- MAINTAIN CONTROL PRACTICES AND PERFORM SELF-MONITORING.
- REVEGETATE SITE.
- REMOVE REMAINING TEMPORARY CONTROL MEASURES & STABILIZE.
ANTICIPATED COMPLETION (GROUND COVER ESTABLISHED) DATE: _____

PREPARED BY: DLZ INDIANA, LLC



B. Smith
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012



EROSION CONTROL-
LIGHT LAND DISTURBING

SHT. NO.

I-10

CONSTRUCTION SEQUENCE & COMMON PRACTICES FOR EROSION & SEDIMENT CONTROL

1. EVALUATE THE SITE

BEFORE CONSTRUCTION, EVALUATE THE SITE; MARK VEGETATIVE AREAS AND TREES TO BE PROTECTED, UNIQUE AREAS TO PRESERVE, ON-SITE SEPTIC SYSTEM ABSORPTION FIELDS, AND VEGETATION SUITABLE FOR FILTER STRIPS, ESPECIALLY IN PERIMETER AREAS.

PROTECT TREES & SENSITIVE AREAS

- TO PREVENT ROOT DAMAGE, DO NOT GRADE, BURN, PLACE SOIL PILES, OR PARK VEHICLES NEAR TREES OR IN AREAS MARKED FOR PRESERVATION.
- PLACE PLASTIC MESH OR SNOW FENCE BARRIERS AROUND TREE DRIPLINES TO PROTECT THE ROOTZONE.
- PLACE A PHYSICAL BARRIER, SUCH AS PLASTIC FENCING, AROUND THE AREA DESIGNATED FOR A SEPTIC SYSTEM ABSORPTION FIELD (IF APPLICABLE).

2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS

IDENTIFY THE AREAS WHERE SEDIMENT LADEN RUNOFF COULD LEAVE THE CONSTRUCTION SITE, AND INSTALL PERIMETER CONTROLS TO MINIMIZE THE POTENTIAL FOR OFF-SITE SEDIMENTATION. PERIMETER CONTROLS SHALL BE IN PLACE BEFORE ANY EARTHMOVING ACTIVITIES BEGIN.

PROTECT DOWN-SLOPE AREAS WITH VEGETATIVE FILTER STRIPS

- ON SLOPES OF LESS THAN SIX PERCENT, PRESERVE A 20-TO 30-FOOT WIDE (MINIMUM) VEGETATIVE BUFFER STRIP AROUND THE PERIMETER OF THE PROPERTY, AND USE IT AS A FILTER STRIP FOR TRAPPING SEDIMENT.
- DO NOT MOW FILTER STRIP VEGETATION SHORTER THAN FOUR INCHES.

PROTECT DOWN-SLOPE AREAS WITH SILT FENCES AND OTHER APPROPRIATE PRACTICES

- USE SILT FENCE OR STRAW WATTLES ALONG THE PERIMETER OF PROJECT AREA'S DOWNSLOPE SIDE(S) TO TRAP SEDIMENT. REFER TO PERIMETER PROTECTION DETAILS 1-7 AND 1-8.

INSTALL GRAVEL CONSTRUCTION ENTRANCE

- IDENTIFY EXISTING PAVEMENT FOR ACCESS OR INSTALL A STABILIZED GRAVEL CONSTRUCTION ENTRANCE TO PREVENT TRACKING OF MUD ONTO THE ROAD BY ALL VEHICLES. MAINTAIN THROUGHOUT CONSTRUCTION. SWEEP STREETS DAILY TO REMOVE ANY SEDIMENT THAT LEAVES THE SITE. REFER TO GRAVEL CONSTRUCTION ENTRANCE DETAIL 1-3.

PROTECT STORM SEWER INLETS

- CURB INLET PROTECTION DEVICES ALONE ARE NOT EFFICIENT IN REMOVING SEDIMENT FROM STORMWATER RUNOFF. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MUST BE INCORPORATED INTO THE PLAN AND THE DAY-TO-DAY CONSTRUCTION OPERATIONS TO MINIMIZE THE AMOUNT OF SEDIMENT ENTERING A STREET. THE BEST DEFENSE IN CONTROLLING SEDIMENTATION IS THE INSTALLATION OF PERIMETER PROTECTION DOWNSLOPE OF THE CONSTRUCTION ACTIVITY, USING GRAVEL CONSTRUCTION ENTRANCES, AND DAILY CLEANING AND REMOVAL OF SEDIMENT FROM STREETS.

- "THE INDIANA STORM WATER QUALITY MANUAL" CONTAINS STANDARDS AND SPECIFICATIONS FOR VARIOUS CURB INLET PROTECTION DEVICES AS WELL AS MAINTENANCE GUIDELINES FOR EACH DEVICE. AS THESE PRACTICES ARE NOT DESIGNED TO TRAP LARGE AMOUNTS OF SEDIMENT AND REQUIRE FREQUENT MAINTENANCE IF THEY ARE TO REMAIN EFFECTIVE.

- WHEN SELECTING A CURB INLET PROTECTION MEASURE, IT IS IMPORTANT TO SELECT A DEVICE THAT DOES NOT BLOCK THE INLET ENTIRELY. TOTAL OBSTRUCTION OF THE INLET WILL CAUSE EXCESSIVE PONDING AND, IN SOME SITUATIONS, BYPASS FLOW THAT MAY RESULT IN EROSION.

- PROTECT ON-SITE STORM SEWER DROP INLETS WITH SILT FENCE MATERIAL, GRAVEL RING, COMMERCIAL BASKET, OR APPROVED EQUIVALENT. REFER TO DETAILS 1-4, 1-5 AND 1-6.

- INLET PROTECTION SHALL BE PLACED BEFORE PAVEMENT OR LANDSCAPE AREA WITHIN 50' OR UPSTREAM FROM STRUCTURE IS DISTURBED. PROTECTION IS TO REMAIN AND BE MAINTAINED UNTIL PAVEMENT AND/OR PLANTING AREA ARE STABILIZED.

3. PREPARE THE SITE FOR CONSTRUCTION

PREPARE THE SITE FOR CONSTRUCTION AND FOR INSTALLATION OF UTILITIES. MAKE SURE ALL CONTRACTORS (ESPECIALLY EXCAVATING CONTRACTOR) ARE AWARE OF AREAS TO BE PROTECTED.

SALVAGE AND STOCKPILE TOPSOIL OR SUBSOIL

- REMOVE TOPSOIL (TYPICALLY THE UPPER FOUR TO SIX INCHES OF SOIL MATERIAL) AND STOCKPILE.
- REMOVE SUBSOIL, INCLUDING ANY EXCAVATED MATERIAL ASSOCIATED WITH BASEMENT CONSTRUCTION, AND STOCKPILE SEPARATELY FROM THE TOPSOIL.
- ON SMALL BUILDING SITES, IT MAY NOT BE FEASIBLE TO STOCKPILE SOIL MATERIAL ON EACH INDIVIDUAL LOT DUE TO SPACE LIMITATIONS. IN THESE SITUATIONS, SOIL MATERIAL SHOULD BE TRANSPORTED TO PROTECTED AREAS DESIGNATED ON THE OVERALL CONSTRUCTION PLAN OR THOSE AREAS DESIGNATED BY THE DEVELOPER.
- LOCATE THE STOCKPILES AWAY FROM ANY DOWNSLOPE STREET, DRIVEWAY, STREAM, LAKE, WETLAND, DITCH OR DRAINAGEWAY.
- IMMEDIATELY AFTER STOCKPILING, TEMPORARY SEED THE STOCKPILES WITH ANNUAL RYE OR WINTER WHEAT AND/OR INSTALL SEDIMENT BARRIERS AROUND THE PERIMETER OF STOCKPILES. SEDIMENT BARRIERS SHOULD BE PLACED 10' FROM THE TOE OF SLOPE.

4. BUILD STRUCTURE(S) AND INSTALL UTILITIES

CONSTRUCT THE STRUCTURE AND INSTALL ASSOCIATED UTILITIES, INCLUDING THE SEWAGE DISPOSAL SYSTEM AND WATER WELL (IF APPLICABLE); THEN CONSIDER THE FOLLOWING:

INSTALL DOWNSPOUT EXTENDERS

- ALTHOUGH NOT REQUIRED, DOWNSPOUT EXTENDERS ARE HIGHLY RECOMMENDED AS A MEANS OF PREVENTING LOT EROSION FROM ROOF RUNOFF.
- ADD THE EXTENDERS AS SOON AS THE GUTTERS AND DOWNSPOUTS ARE INSTALLED.
- BE SURE THE EXTENDERS HAVE A STABLE OUTLET, SUCH AS A PAVED AREA, OR A WELL VEGETATED AREA. DO NOT ROUTE RUNOFF DIRECTLY TO A STREET IN WINTER DUE TO THE FORMATION OF ICE. REFER TO TEMPORARY DOWNSPOUT EXTENDERS DIAGRAM.

CONSTRUCTION MATERIALS

- MANAGE HAZARDOUS CHEMICALS, MATERIALS, AND OTHER COMPOUNDS TO AVOID CONTAMINATION OF RUNOFF. HAZARDOUS MATERIALS SHOULD BE STORED WITH SECONDARY CONTAINMENT.
- DISPOSE OF CONCRETE WASH WATER IN AN AREA AWAY FROM SURFACE WATERS WHERE SOIL CAN ACT AS A FILTER OR EVAPORATE THE WATER. DISPOSE OF REMAINING CEMENT. BE AWARE THAT THIS WATER CAN KILL VEGETATION. FOR LARGE SITES, A CONSTRUCTED CONCRETE WASHOUT SHOULD BE PROVIDED PER THE INDIANA STORM WATER QUALITY MANUAL.
- PREVENT THE DISCHARGE OF SEDIMENT FROM DE-WATERING OPERATIONS INTO STORM SEWERS AND SURFACE WATERS.

MAINTAIN CONTROL PRACTICES

- MAINTAIN ALL EROSION AND SEDIMENT CONTROL PRACTICES UNTIL CONSTRUCTION IS COMPLETED AND THE LOT IS STABILIZED.
- INSPECT THE CONTROL PRACTICES A MINIMUM OF TWICE A WEEK AND AFTER EACH STORM EVENT OVER 1/2" AND DAILY DURING PROLONGED STORM EVENTS, MAKING ANY NEEDED REPAIRS IMMEDIATELY.
- TOWARD THE END OF THE EACH WORK DAY, SWEEP OR SCRAPE UP ANY SOIL TRACKED ONTO ROADWAY(S). DO NOT FLUSH AREAS WITH WATER.
- KEEP AN UP-TO-DATE RECORD ONSITE OF ANY ALTERATIONS TO THE STORM WATER POLLUTION PREVENTION PLAN.
- SEE CONSTRUCTION/LAND DISTURBANCE STORM WATER PERMITTING REQUIREMENTS FOR MONITORING AND DOCUMENTATION OF EROSION CONTROL MEASURES.

ADDITIONAL TEMPORARY MEASURES

- IF CONSTRUCTION WINDOW EXTENDS THROUGH WINTER, TEMPORARY MULCHING AS SPECIFIED IN CHAPTER 7 OF THE INDIANA STORMWATER QUALITY MANUAL SHOULD BE USED.
- TEMPORARY SEEDING SHOULD BE INSTALLED ON ANY CLEARED AREA THAT WILL BE UNDISTURBED FOR 15 DAYS OR MORE.
- CONTROL DUST ON SITE WHEN NECESSARY USING METHODS WHICH COMPLY WITH THE INDIANA STORM WATER QUALITY MANUAL.

REVEGETATE BUILDING SITE

- REDISTRIBUTE THE STOCKPILED SUBSOIL AND TOPSOIL.
- SPREAD THE STOCKPILED SUBSOIL TO ROUGH GRADE.
- SPREAD THE STOCKPILED TOPSOIL TO A DEPTH OF FOUR TO SIX INCHES OVER ROUGH GRADED AREAS.
- FERTILIZE AND LIME ACCORDING TO SOIL TEST RESULTS OR RECOMMENDATIONS OF A SEED SUPPLIER OR A PROFESSIONAL LANDSCAPE CONTRACTOR.
- CONTACT LOCAL SEED SUPPLIERS OR PROFESSIONAL LANDSCAPE CONTRACTORS FOR RECOMMENDED SEEDING MIXTURES AND RATES.
- IMMEDIATELY AFTER ALL OUTSIDE CONSTRUCTION ACTIVITIES ARE COMPLETED, STABILIZE THE LOT WITH SOD, SEED, AND/OR MULCH.
- FOLLOW RECOMMENDATIONS OF A PROFESSIONAL LANDSCAPE CONTRACTOR FOR INSTALLATION OF SOD OR SEED.
- WATER NEWLY SEEDDED OR SODDED AREAS AS NEEDED TO KEEP THE SOIL MOIST. LESS WATERING IS NEEDED ONCE GRASS IS TWO INCHES TALL.
- MULCH NEWLY SEEDDED AREAS. SPREAD STRAW MULCH ON NEWLY SEEDDED AREAS, USING ONE AND ONE-HALF TO TWO BALES OF STRAW PER 1,000 SQUARE FEET. ON FLAT OR GENTLY SLOPING LAND, ANCHOR THE MULCH BY CRIMPING IT TWO TO FOUR INCHES INTO THE SOIL. ON STEEP SLOPES, ANCHOR THE MULCH WITH NETTING OR TACKIFIERS. AN ALTERNATIVE TO ANCHORED MULCH WOULD BE THE USE OF EROSION CONTROL BLANKETS.
- MONITOR SITE FOR BARE AREAS AND MAINTAIN EROSION CONTROL MEASURES UNTIL THE VEGETATIVE COVER MEETS OR EXCEEDS 70%.

7. REMOVE REMAINING

TEMPORARY CONTROL MEASURES

- ONCE THE SOD AND/OR VEGETATION IS WELL ESTABLISHED (MINIMUM OF 70% COVER), REMOVE ANY REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES AND STABILIZE ANY DISTURBED AREA REMAINING.
- REMOVE DOWNSPOUT EXTENDERS. OR, SHORTEN TO OUTLET ON AN ESTABLISHED VEGETATED AREA, ALLOWING FOR MAXIMUM FILTRATION.
- REMOVE STORM SEWER INLET PROTECTION MEASURES WHEN AREA WITHIN 50' OR UPSTREAM OF THE STRUCTURE HAS BEEN STABILIZED.

PREPARED BY: DLZ INDIANA, LLC



B. Smith
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

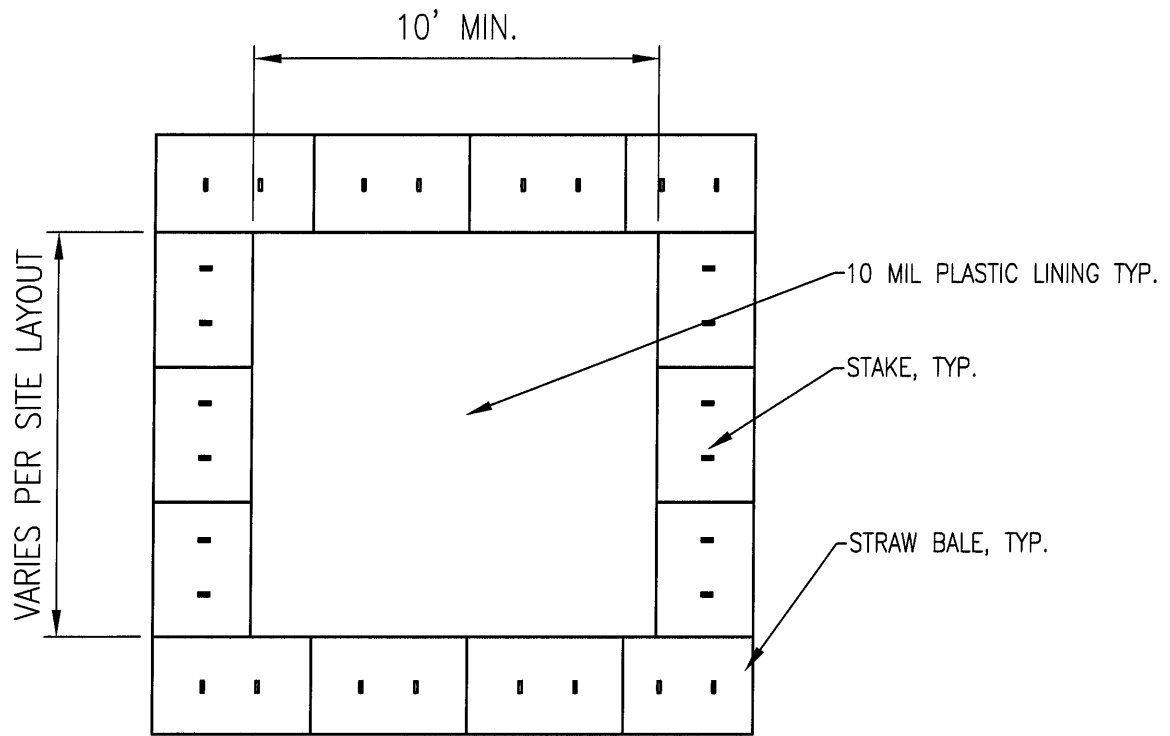
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CONSTRUCTION SEQUENCE

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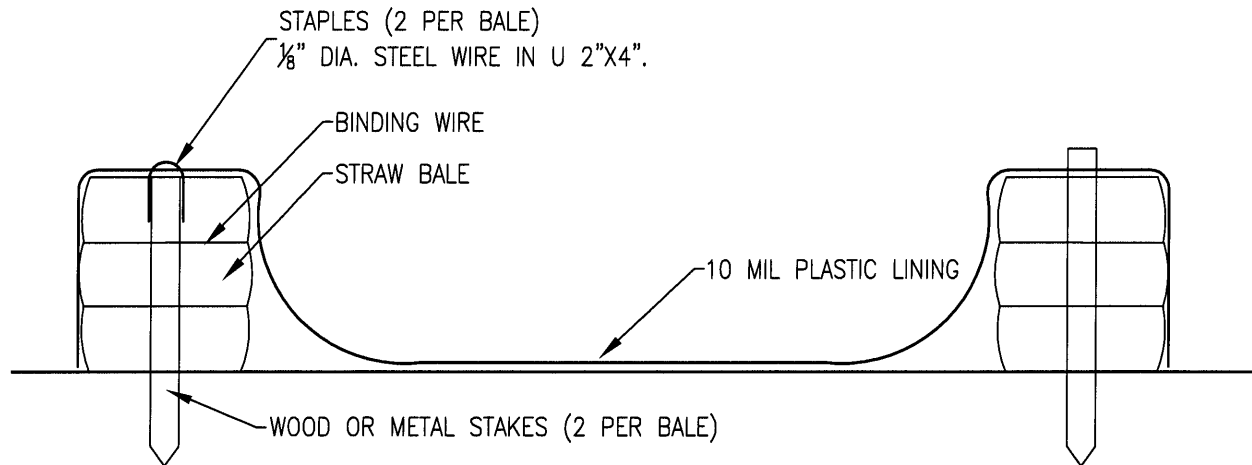
1-11



ITEM	REVISION	APPROVED DATE
	EFFECTIVE	APRIL 2007
	REVISED	JUNE 2012



PLAN



SECTION

NOTES:

1. INSTALL CONCRETE WASHOUT SIGN WITHIN 30' OF TEMPORARY WASHOUT FACILITY.
2. LAYOUT OF WASHOUT FACILITY MAY VARY DEPENDING ON SPACE AVAILABLE WITHIN CONSTRUCTION STAGING AREA. WASHOUT FACILITIES SHALL BE DESIGNATED BY THE PERMIT HOLDER BEFORE WORK BEGINS AND SHALL BE LOCATED IN AN APPROPRIATE AREA WHERE THE WASTE RESULTING FROM THE WASHOUT CANNOT ENTER SEWER SYSTEMS OR LOCAL WATERWAYS.
3. WASTE FROM THE WASHOUT FACILITIES SHALL BE DISPOSED OF IN AN APPROVED MANNER ACCORDING TO STATE LAWS.

PREPARED BY: DLZ INDIANA, LLC



Brian M. Smith
6-1-12

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CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

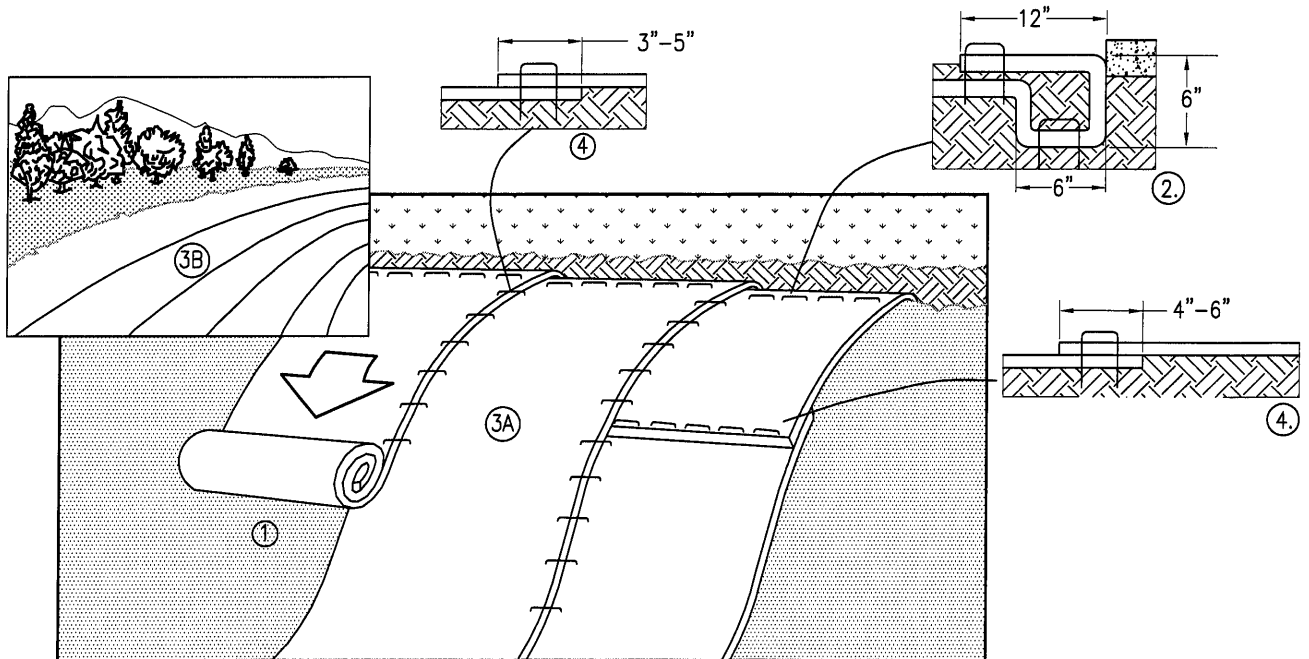
CONCRETE WASHOUT

SHT. NO.

1-12

ITEM	REVISION	APPROVED DATE
	ADOPTED: NEW	JUNE 2012





SLOPE INSTALLATION

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS PER BY MANUFACTURER'S RECOMMENDATION.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 3"-5" OVERLAP. ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. SPLICING CONSECUTIVE BLANKETS DOWN THE SLOPE SHALL BE DONE IN A SHINGLE STYLE WITH THE UP-SLOPE BLANKET OVERLAPPING THE DOWN-SLOPE BLANKET 3" MINIMUM. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
6. IN LOOSE SOIL CONDITIONS THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15CM) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

GENERAL NOTES:

1. INSTALL EROSION CONTROL BLANKET TO PREVENT EROSION ON SLOPES 3:1 OR STEEPER, AS WELL AS OTHER AREAS PRONE TO EROSION, TO AID IN ESTABLISHING VEGETATION AND PREVENTING SOIL MOVEMENT.
2. INSTALLATION INSTRUCTIONS ABOVE ARE PROVIDED FOR REFERENCE ONLY. INSTALLATION SHOULD BE COMPLETED IN ACCORDANCE WITH EROSION CONTROL BLANKET MANUFACTURER'S SPECIFICATIONS.
3. MODEL AND MANUFACTURER TO BE SELECTED BASED ON PROJECT SLOPES, VEGETATION, AND SOIL CONDITIONS.

PREPARED BY: DLZ INDIANA, LLC



Brian M. Smith
6-1-12

APPROVED/REVISED BY THE BOARD OF PUBLIC WORKS & SAFETY

CITY OF MISHAWAKA, INDIANA

ENGINEERING STANDARDS

EROSION CONTROL
BLANKET

SHT. NO.

1-13

ITEM	REVISION	APPROVED DATE
	ADOPTED: NEW	JUNE 2012

